

Some Facts about Recent Air Pollution Problem in Delhi- Letter to the Editor

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Dear Editor

During past few months, air pollution problem of Delhi has been a matter of discussion at various forums. Common man pays attention to this issue as it involves each one of us. Due to various bottlenecks, as yet the pollution control authorities have no proper solution. The primary reason is that the issue has never been scientifically analyzed and discussed. This note points out those reasons with some facts, which are not known to the public and various stakeholders.

Trans-boundary pollution and need of Inter-state task force

There are three major issues linked to air pollution in Delhi. First is dust, which includes soil dust, road dust and the dust from construction activities. Secondly, local emissions from transport and industries and thirdly the pollution transported from nearby states. If we look back, Delhi city was a strong source of air pollution due to diesel driven buses in 1990s. Later, these buses were replaced by CNG buses due to Supreme Court's order. This was a great relief for the citizens of Delhi. However, this proved to be short lived because air pollutants are again on increasing trends due to various reasons. Amidst such a scenario, it is interesting to notice that the levels of most of these pollutants are below the NAAQS prescribed limit except particulate matter. But as a matter of surprise, during past few months (Oct 2014-Mar 2015) the levels of SO₂ were reported extremely high (above 400 micrograms per cubic meter) by one news paper. We also measured sudden increase in the levels of SO₂ and NO₂ during this period. CPCB data also match with our values. This sudden increase is a mystery and cannot be explained based on the present sources of these oxides and the prevailing meteorology in the city. Even the possibility of sabotage cannot be ruled out. In my opinion, at present, Delhi is victim of trans-boundary pollution from nearby states such as Uttar Pradesh, Haryana and Punjab. Hundreds of brick kiln units have come up in NCR, which are exporting air pollutants to Delhi. For last few months, Delhi had the worst air quality due to these sources. Crop residue burning and heavy duty vehicles are some important external sources affecting air quality in Delhi. Hence, if we are serious, there should be some joint task force

involving Delhi, UP, Haryana and Punjab governments, for organized joint action. In the present worsening air pollution scenario (Especially between Oct 2014 and Mar 2015), Delhi Government has very limited role to play except controlling the local vehicular and industrial emissions. PUC law for all types of vehicles should be implemented strictly. In this regard, the orders of National Green Tribunal (NGT) are really appreciable. However, for a policy level analysis of the problem and the possible solutions, it is necessary to differentiate the above three factors and act to more effective implementation of measures.

Atmospheric dust and black carbon are the two major pollutants

No doubt that pollution is increasing in Delhi but it gets dispersed very soon except for few localities due to its topography and meteorology. Many times people compare air pollution of Delhi and Beijing but ignore to discuss the topographical and meteorological differences between Beijing and Delhi. Fortunately, in spite of all odds, Delhi is blessed with very high natural dispersion of pollution where pollution does not stagnate more than a few days, which is not the case for Beijing.

The fact is that Delhi or any city in India especially the north India, atmospheric dust and black carbon are the two major pollutants that create haze, reducing the visibility giving rise to an impression of high pollution. So far gaseous pollution is concerned, the situation is almost controlled except carbon monoxide.

Present true picture before the public

In fact, many times, scientific facts are not presented in proper manner; rather these are hyped due to some vested interests. Here, I cite two examples as a matter of hype, which send wrong messages to the common public and policy makers-

1. Generally, reports say that NO₂ pollution is very high. But the fact is that it is well below the NAAQS limits prescribed by CPCB (80 micrograms per cubic meter for residential and industrial areas for 24 hrs time weighted average). However, there is no doubt that NO₂ is having increasing trend, but under control limits. Unfortunately,

the 'increasing' has been hyped too much. I am not advocating that it should not be controlled, but bringing in to light the studies carried out by air pollution scientists is essential to understand actual level and impact of pollution, for the benefit of public who usually get perturbed by incomplete information.

2. Second myth is about the particulate matter. For a common man it appears that the levels of particulate matter have increased abruptly in past few years. This is not true. Our findings of past 25 years have always highlighted very high levels of particulate matter primarily due to suspended dust and road dust, construction activities and also due to its long range transport from Middle East and Africa. It is very difficult to control such emissions due to obvious reasons. SPM, RSPM and even $PM_{2.5}$ levels are always higher than that of NAAQS values, even in rural areas. Analysis of historical data and recorded information of the past couple of centuries suggest that even though people have been exposed with all time high particulate matter since centuries, no human deaths have been reported due to high dust. This is due to the fact that the dust is mostly of crustal origin and not very harmful. To make details useful and informative it is essential to highlight carbon content, POP content and metal content, which are contributed by the transport and industrial emissions in addition to biomass burning sources.

Need to define new criteria for $PM_{2.5}$

In order to avoid any misleading information about particulate levels, I suggest to develop criteria to start reporting $PM_{2.5}$ (HM) for heavy metal content, $PM_{2.5}$ (P) for its POP content and $PM_{2.5}$ (C) for its carbon content, which will really set the goal of air cleaning through meaningful criteria instead of crying foul for $PM_{2.5}$. Similar criteria can be described for RSPM. This approach can also be used to develop Air Quality Index for Indian reference.

Present AQI serves no purpose

Not many people know that Air Quality Index (AQI) developed based on the approach of the west, serves no purpose in India. In most parts of the north India, it will never be good or 'green', which means all the Indians are living in unhealthy air mainly due to high particulate matter. Since, these high levels are there for centuries in India, always unhealthy AQI also translates that such air quality is not really adverse and it needs to be treated just as background environment of this region. Or one can say that the present AQI is just like having a wall clock, which

is half an hour fast. AQI levels from "satisfactory" and above up to "severe" category indicate unhealthy air. Such details fail to communicate the message that air quality is bad. It also fails to provide effective advisory to the people involved in various businesses involving "air", as an input commodity or the businesses involve outdoor activities. If the advisories are proper and regular people can take note of such advisories and suspend their outdoor work. If people start taking the present type of advisory issued by AQI seriously, most of the days, majority of them will not be allowed to go out to work, which will have economic consequences. At most of the places, the AQI indicates adverse quality of air due to developmental activities and road dust. Hence, the above suggested approach of defining criteria for $PM_{2.5}$ will really help the society to believe and follow AQI and the instructions of air pollution regulatory bodies.

High particulate matter is not always bad

High levels of particulate matter are bad from human health point of view. However, due to the dominance of calcium carbonate, particulate matter is controlling the acid rain in India. Such particulate matter buffers the acidity generated by the acidic gases, thereby protecting the leaching of nutrients from the soils. Hence, complete removal of particulate matter will be devastating for ecosystem as it will result in acidification in India.

Editor's Note:

Details given above are informative and apt. It is evident that any recorded information pertaining to air pollution should invariably give scientific basis for anomalous and abrupt changes in values, as present generation gives due importance to such details, believing they are error free. Advisories should be apt and clearly emphasize to what extent the advisories have to be relied on (specifically including error limits). It is essential to note any data/information generated using different sets of gadgets do have some variations and as such while installing recording units one should have proper calibration of the instruments and select units that are compatible.

I appreciate the concern of Prof. Kulshrestha, as our basic objective in generating scientific information is to help the society in properly meeting the identified adversaries and not mislead them with details that are basically error prone.

Concerned administrative channels managing pollution related issues should invariably make use of the expertise available next door, instead of routinely releasing bulletins that may convey wrong information.